
***COTTON GIN OPERATING COSTS
IN THE LOWER RIO GRANDE VALLEY
OF TEXAS--1970 AND 1971***

ABSTRACT

Utilization of sample gin plant capacity in the Lower Rio Grande Valley of Texas averaged 29 percent for 1970 and 43 percent for 1971, based on a rated hourly capacity of 15.3 bales for the sample average. Generally, fuller utilization of plant capacities the second year resulted in a reduction in weighted average operating cost totals from \$29.64 per bale in 1970 to \$23.62 per bale in 1971. Capacity utilization and operating costs covering the 1970 and 1971 seasons were analyzed for a sample of 21 gins representing well over one-third of both the total ginning capacity and the annual ginning volumes for the Lower Rio Grande Valley.

Keywords: Cotton, ginning, costs, rates, capacity, utilization.

PREFACE

This is one of a series of ginning cost studies conducted by USDA in the major producing areas of the Cotton Belt. It is the first such study of the Lower Rio Grande Valley. Other producing areas now being covered in annual reports are West Texas, the Blacklands of Texas, the Mississippi Delta, and the San Joaquin Valley of California. Findings contained in these reports are derived from gin operating cost records which are received annually by mail from a sample of gins located in each area. Area ginners use these findings as benchmarks or guides in evaluating the efficiencies of their own operations.

ACKNOWLEDGMENT

Sincere appreciation is extended to the sample ginners and their accountants. It is only through their continuous cooperation that a study of this type can be carried on.

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GRANDE VALLEY OF TEXAS--1970 AND 1971

by

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INTRODUCTION

Virtually all of the cotton produced in the area comprising the Lower Rio Grande Valley comes from Cameron, Hidalgo, and Willacy counties. These three counties claimed a total of 74 active gins in 1970 and 70 in 1971, but a fourth county, Starr, reported only one active gin both years. 2/

Gins in this area were classified by rated capacities in bales per hour and stratified into four size groups: group 1--8 bales or less; group 2--9 to 11 bales; group 3--12 to 20 bales; and group 4--21 bales or more. 3/ The same random sampling procedure as that employed in West Texas was used in the selection of the study gins for each group. The resulting 21 gins selected as the sample represented approximately 38 percent of the total ginning capacity for the area. In 1970, these 21 gins accounted for a total of 71,710 bales. During the 1971 season, these same gin plants were responsible for 107,026 bales or 40 percent of total area ginning for that year.

RESULTS

In 1970, total volumes ginned among the sample gins in this study ranged from 1,395 to 8,392 bales with an average of 3,415 bales (table 1). Corresponding rates of utilization on gin plant

1/ Wilmot and Shaw are agricultural economists, and Heron is an economic assistant.

2/ Cotton Ginnings in the United States, Crop of 1971, U.S. Dept. Commerce, Bur. Census, Washington, D.C., August 1972.

3/ In another study recently initiated in the Blacklands, adherence to these same size groupings was impossible due to the predominance of smaller gin plants.

Table 1--Rated hourly capacities, volumes ginned, and capacity utilization, sample gin plants by size group, Lower Rio Grande Valley of Texas, 1970 and 1971

Season and gin size group	Rated		Annual volume ginned	Rate of capacity utilization 2/	
	Range	Average	Range	Average	Range
	-----Bales-----		-----Percent-----		
1970:					
Group 1.....	8- 8	8.0	1,463- 2,201	1,729	24-36
Group 2.....	9-11	9.0	1,550- 2,737	2,096	22-39
Group 3.....	12-19	16.1	1,395- 4,672	3,400	10-36
Group 4.....	24-30	26.8	3,400- 8,392	6,360	18-42
Combined.....	8-30	15.3	1,395- 8,392	3,415	10-42
1971:					
Group 1.....	8- 8	8.0	1,611- 2,687	2,140	26-44
Group 2.....	9-11	9.0	1,174- 3,481	2,285	17-50
Group 3.....	12-19	16.1	1,691- 7,937	5,047	12-59
Group 4.....	24-30	26.8	4,711-14,739	10,939	25-70
Combined.....	8-30	15.3	1,174-14,739	5,096	12-70

1/ Based on observations in plants operating under normal conditions.

2/ Ratio of volume ginned to estimated total seasonal ginning capacity without seed cotton storage. Based on typical ginning season of 906 operating hours and a sustained seasonal capability estimated at 85 percent of rated hourly capacities.

capacity ranged from 10 to 42 percent with an overall average of 29 percent. ^{4/} During the 1971 season, the ginning volume ranged from 1,174 to 14,739 bales and averaged 5,096 bales. This increase of 49 percent in the overall average volume for 1971 compared with 1970 is reflected in generally higher rates of plant capacity utilization, which ranged from 12 to 70 percent and averaged 43 percent. Sample gins ranged in rated hourly capacities from 8 to 30 bales and averaged 15.3 bales both years.

Operating Costs at Existing Rates of
Plant Capacity Utilization ^{5/}

Economies of scale were evident in out-of-pocket costs for both the 1970 and 1971 seasons and in total costs for 1971 (tables 2 and 3). Out-of-pocket costs per bale ranged from a high of \$27.34 for group 1 to a low of \$22.32 for group 4 in 1970, and from \$23.41 for group 1 to \$18.74 for group 4 in 1971. Likewise, during the 1971 season, total sample gin costs per bale were highest for group 1 and lowest for group 4 with a range of \$26.73 to \$21.36. However, in 1970, total costs for group 2 were slightly higher (\$0.38) than for group 1, resulting in a range from \$31.37 per bale for group 2 to \$27.79 for group 4. The higher cost per bale for group 2 compared with group 1 appeared to be due mainly to substantially higher repair costs.

During both the 1970 and 1971 ginning seasons, total standardized sample gin costs were also highest for group 2, and they ranged from \$40.02 per bale for group 2 to \$32.90 for group 4 in 1970 and from \$34.61 for group 2 to \$25.09 for group 4 in 1971. Higher-than-average investment costs, coupled with abnormally low ginning volumes for two or three gin plants in size group 2 for each of the two years, accounted for the highest total standardized costs appearing in the group 2 average.

Weighted average out-of-pocket costs per bale were 16 percent lower while total sample gin and total standardized costs were each 20 percent lower in 1971 compared with the previous season. This general reduction in operating costs was due to appreciable increases in average ginning volumes and attendant rates of capacity utilization as noted earlier.

^{4/} Ratio of volume ginned to estimated total seasonal ginning capacity without seed cotton storage. Based on typical ginning season of 906 operating hours and a sustained seasonal capability estimated at 85 percent of rated hourly capacities.

^{5/} See Costing Methods in appendix.

Table 2--Costs per bale in sample gin plants by size group, and average for all plants, Lower Rio Grande Valley of Texas, 1970

Cost item 1/	Group 1		Group 2		Group 3		Group 4		:Weighted
	Range 2/	Average:	Range 2/	Average:	Range 2/	Average:	Range 2/	Average:	
----- Dollars -----									
Management.....	3.69- 8.73	6.54	2.40- 9.14	5.83	2.80- 9.10	5.02	3.50- 5.92	4.55	5.33
Insurance.....	.84- 1.03	.96	.36- 1.44	.99	.28- .98	.62	.17- 1.73	.63	.74
Taxes.....	.46- 1.55	.83	.83- 1.64	1.24	.31- 1.56	.93	.13- 1.30	.38	.87
Energy.....	1.73- 2.69	2.03	.74- 2.01	1.41	1.07- 3.26	1.55	1.52- 2.42	1.94	1.68
Labor.....	3.02- 9.10	5.79	4.15- 7.20	5.59	2.81- 6.93	4.48	3.47- 6.58	5.34	5.06
Bagging and ties..	3.42- 3.60	3.47	3.35- 3.42	3.41	3.38- 3.63	3.44	2.76- 3.60	3.23	3.40
Repairs.....	3.72- 4.38	4.01	3.32- 6.99	5.24	1.92- 6.20	3.67	1.50- 5.86	3.12	3.90
Miscellaneous.....	2.52- 6.31	3.70	1.41- 5.46	3.16	1.77- 4.89	3.05	2.37- 3.84	3.12	3.19
Out-of-pocket									
subtotal 4/.....	19.55-33.17	27.34	23.13-30.43	26.87	17.30-32.56	22.75	17.65-28.18	22.32	24.17
Depreciation.....	2.49- 3.02	2.67	.90- 5.56	3.53	2.55- 9.52	5.23	3.81- 5.44	4.25	4.31
Interest.....	.08- 3.18	.98	.05- 4.47	.97	0 - 4.92	1.27	.01- 2.44	1.22	1.16
Total.....	22.13-38.74	30.99	29.33-33.79	31.37	22.81-44.06	29.25	21.47-32.80	27.79	29.64
Standardized									
depreciation 5/...	1.99- 5.83	4.08	4.25-14.02	8.04	2.99-11.59	7.48	3.64- 9.43	6.54	6.83
standardized									
interest 5/.....	1.58- 3.96	2.89	3.15- 8.65	5.11	2.04- 7.18	4.67	2.32- 5.86	4.04	4.33
Total									
standardized 6/:	23.12-42.96	34.31	30.53-46.62	40.02	22.34-51.34	34.90	28.19-40.06	32.90	35.33

1/ Taken from gin records and subjected to uniform allocation procedures--see appendix.

2/ Low and high values shown for individual cost items indicate ranges among sample gins within a size group. Since the same gin plant was not consistently lowest or highest for all cost items, individual costs will not add to totals shown.

3/ Sample averages across groups, weighted by each group's representative proportion of the total rated hourly ginning capacity in the study area gin universe.

4/ Sample gin cost excluding depreciation and interest.

5/ Sample gin costs from which effects of variations in rates used in computing depreciation and interest have been eliminated--see appendix.

6/ Out-of-pocket costs plus standardized depreciation and standardized interest.

Note: Individual cost items may not add to total because of rounding.

Table 3--Costs per bale in sample gin plants by size group, and average for all plants, Lower Rio Grande Valley of Texas, 1971

Cost item 1/	Group 1		Group 2		Group 3		Group 4		Weighted
	Range 2/	:Average:	Range 2/	:Average:	Range 2/	:Average:	Range 2/	:Average:	
-----Dollars-----									
Management.....	1.78- 6.97	4.61	1.56- 6.64	4.13	2.54- 7.52	3.74	2.07- 4.71	3.14	3.78
Insurance.....	.62- .96	.74	.54- 3.55	1.24	.26- 1.55	.50	.11- 1.13	.35	.60
Taxes.....	.42- 1.25	.73	.64- 2.25	1.14	.27- 1.33	.66	.12- .91	.38	.67
Energy.....	1.65- 3.02	2.11	.83- 1.83	1.42	.85- 3.05	1.38	1.16- 1.81	1.50	1.52
Labor.....	3.28- 9.45	5.96	2.45- 8.54	4.76	2.58- 7.57	3.93	3.10- 5.28	4.34	4.44
Bagging and ties...	3.82- 3.82	3.82	3.65- 3.82	3.76	3.82- 3.93	3.85	3.82- 3.91	3.83	3.83
Repairs.....	2.18- 2.34	2.27	2.01- 7.08	3.64	1.23- 4.15	2.56	1.52- 3.04	2.01	2.54
Miscellaneous.....	2.12- 5.63	3.16	1.83- 4.33	2.45	1.56- 4.36	2.70	1.62- 4.30	3.18	2.84
Out-of-pocket									
subtotal 4/.....	16.11-32.71	23.41	18.40-31.39	22.54	14.55-31.49	19.31	16.08-23.64	18.74	20.22
Depreciation.....	2.04- 2.17	2.11	.40- 5.73	2.78	1.34- 6.01	3.02	1.77- 1.93	1.85	2.58
Interest.....	.07- 3.16	1.22	.05- 4.17	.95	0 - 2.73	.67	.01- 1.77	.78	.81
Total.....	18.22-38.02	26.73	21.39-39.79	26.27	18.36-35.78	23.01	18.02-25.76	21.36	23.62
Standardized									
depreciation 5/...	1.63- 4.91	3.30	3.58-19.78	7.38	2.58-10.13	5.05	2.31- 6.80	3.92	4.85
Standardized									
interest 5/.....	1.29- 3.40	2.33	2.37-12.26	4.69	1.76- 6.27	3.15	1.46- 4.23	2.42	3.07
Total									
standardized 6/	19.04-41.02	29.04	26.89-63.43	34.61	18.89-44.32	27.51	21.18-31.37	25.08	28.14

See table 2 for footnotes.

Operating Costs Assuming 70 Percent
Plant Capacity Utilization

To allow cost comparisons at the same relative ginning volume levels, each group average cost and the weighted average cost were adjusted to utilization of 70 percent of capacity (table 4). ^{6/} Spreading such fixed and semifixed costs as insurance, taxes, interest, depreciation, and management and office labor over more bales obviously reduces total ginning costs per bale. Also, increasing annual ginning volumes may reduce some variable costs per bale such as ginning labor and energy. For example, if the average capacity utilization among sample gins for the 1970 season could have been raised from 29 percent to 70 percent, the estimated weighted average total cost would have dropped from \$29.64 to \$18.67 per bale, a decline of 37 percent.

^{6/} See Cost Adjustments in appendix.

Table 4--Estimated costs per bale in sample gin plants at 70 percent capacity utilization, by size group, and average for all plants, Lower Rio Grande Valley of Texas, 1970 and 1971

Cost item 1/	1970				1971					
	Group : 1	Group : 2	Group : 3	Group : 4	Weighted : average	Group : 1	Group : 2	Group : 3	Group : 4	Weighted : average
	----- Dollars -----									
Management.....	3.26	3.13	2.62	2.69	2.62	2.74	2.37	2.62	2.68	2.49
Insurance.....	.48	.51	.34	.36	.40	.45	.67	.35	.30	.41
Taxes.....	.33	.54	.36	.17	.35	.36	.53	.38	.29	.39
Energy.....	1.47	1.04	1.11	1.42	1.21	1.61	1.06	1.11	1.35	1.22
Labor.....	3.64	3.68	2.78	3.56	3.22	4.25	3.30	3.06	3.86	3.45
Bagging and ties.....	3.47	3.41	3.44	3.23	3.40	3.82	3.76	3.85	3.83	3.83
Repairs.....	2.64	3.63	2.45	2.19	2.63	1.68	2.64	2.08	1.82	2.04
Miscellaneous.....	2.97	2.61	2.46	2.62	2.61	2.71	2.07	2.43	3.03	2.56
Out-of-pocket subtotal 2/.....	18.26	18.53	15.55	16.24	16.44	17.62	16.41	15.89	17.16	16.39
Depreciation.....	1.07	1.53	2.05	1.87	1.76	1.05	1.31	1.76	1.40	1.50
Interest.....	.39	.42	.50	.54	.47	.60	.45	.39	.59	.47
Total.....	19.72	20.48	18.10	18.66	18.67	19.27	18.17	18.03	19.16	18.36
Standardized depreciation 3/.....	1.64	3.47	2.93	2.89	2.79	1.64	3.47	2.93	2.98	2.81
Standardized interest 3/.....	1.16	2.21	1.83	1.78	1.77	1.16	2.21	1.83	1.83	1.78
Total standardized 4/...	21.06	24.22	20.31	20.91	21.00	20.41	22.09	20.65	21.97	20.98

1/ Taken from gin records and subjected to uniform allocation procedures--see appendix.

2/ Excludes depreciation and interest.

3/ Costs from which effects of variations in rates used in computing depreciation and interest have been eliminated--see appendix.

4/ Out-of-pocket costs plus standardized depreciation and standardized interest.

Note: Individual cost items may not add to totals because of rounding.

APPENDIX: METHODOLOGY

Gins vary widely by type of organization, ownership structure, accounting procedures used, and in many other ways. In analyzing costs reported by sample gins, uniform allocation procedures described below were employed to remove effects of the differences among firms in accounting procedures.

Costs of hauling cottonseed and lint, such as truckdrivers' wages, truck depreciation, insurance, road-use taxes, associated truck-operating costs, and any other costs not directly related to gin processing were excluded.

Cost Allocations

Management: Where applicable, includes salaries, bonuses, commissions, expense allowance, house rent, and personal insurance policies for owners and managers; bookkeeping and other office salaries, home office cost (line companies); social security taxes, workmen's compensation insurance; and any other insurance on management and office personnel.

Depreciation: Includes allowances for depreciation exactly as carried on gin records except for standardized costs.

Interest: Includes interest exactly as carried on gin records except for standardized costs.

Insurance: Includes cost of all forms of insurance on gin buildings, equipment, housing furnished management and labor, cotton products, and automotive equipment (except large trucks and trailers).

Taxes: Includes all taxes on real property only.

Energy: Includes cost of all utilities--electricity, gas, and water--used in ginning and directly related operations.

Labor: Includes cost of gin wages, social security, workmen's compensation, and any other insurance on gin labor borne by the gin; plus any rental housing furnished labor (excludes gin repair labor; see "Repairs" below).

Bagging and ties: Uniform unit cost, based on current costs, was assumed for all sample gins.

Repairs: Includes cost of gin repair wages, social security, workmen's compensation, and other insurance on gin repair labor borne by the gin; plus the cost of repair materials and supplies.

Miscellaneous: Includes pickup, tractor, and other automotive expense; telephone and telegraph, advertising and promotion; legal and audit; dues, memberships, and subscriptions; annual meetings and director's fees and expense; conventions and travel expense; donations and contributions; cotton losses from fire; sampling, compressing, and related charges; gin and office supplies; and any other costs not included elsewhere.

Costing Methods

Sample gin costs: Gin costs which have been subjected to the above allocations are identified in this report as sample gin costs.

Standardized sample gin costs: Uniform rates for computing depreciation and interest on investment were used in developing standardized sample gin costs. Depreciation was set at 7 percent of the initial purchase price of capital items carried on the depreciation schedule regardless of age or former method of depreciation. Interest was charged at 8 percent on the estimated average value of the land comprising the gin site and 8 percent on one-half the cost of buildings, machinery and equipment.

Out-of-pocket costs: Sample gin costs from which depreciation and interest have been excluded.

Cost Adjustments

Estimates of ginning costs at other than existing levels of capacity utilization were based on relationships assumed in the development of a series of model gins. See: Looney, Zolon M. and Charles A. Wilmot. Economic Models for Cotton Ginning. U.S. Dept. Agr., Agr. Econ. Rpt. 214, Oct. 1971.

Weighting

In computing weighted averages, the simple weighted cost average per bale for each group was further weighted by its representative proportion of the total rated hourly ginning capacity in the Lower Rio Grande Valley. This was done to reflect more accurately the cost of ginning and "average" bale of cotton in that area.